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ABSTRACT

The study sought to isolate and identify patterns occurring in language interactions between mothers and their nonhandicapped and Down Syndrome children. Data were collected as part of a 3-year study of language interaction. Twenty nonhandicapped (NH) and 20 Down Syndrome (DS) children and their mothers were evaluated via a demographic inventory, informal interview, and videotaped analysis of free play and mealtime language samples. Coding was accomplished via the Mother-Child Language Usage system. Results confirmed earlier studies suggesting the child's linguistic ability is the primary determinant of maternal speech. Mothers' speech directed to DS children was not significantly different in nature than mothers' speech directed to NH children, when the children were matched according to their linguistic ability. Findings also pointed out that settings played an important role in the type of utterances mothers directed toward their children. (CL)

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Communicative Interaction Between
Nonhandicapped and Down Syndrome Children
and Their Mothers

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Perhaps no single issue has generated as much debate and research in the mother-retarded child interaction literature as the question of the quality of maternal linguistic environment available to Down Syndrome infants and children. The study which first triggered the debate was reported by Buium, Rynders, and Turners (1974), who discovered marked differences between the adjustments characterizing mother's talk to 24 month old nonhandicapped children and the adjustment identifiable in mother's talk to the same age group of children with Down Syndrome. Down Syndrome children's mothers used more utterances, kept their utterances shorter, and expressed themselves with greater syntactic simplicity. In discussing their data, Buium et al. (1974) suggested that the differences in linguistic environment experienced by these children, when compared to nonhandicapped children, may in part be responsible for their eventual linguistic delays and differences.

Several methodological points need to be considered in interpreting the results of Buium and subsequent studies carried out. First, these studies utilized semi-experimental conditions. For example, Buium et al. created "play situation" and "table settings" in the testing room at the university laboratory to study the language interaction between mothers and their children. Buckhalt et al. (1978) study was conducted in a university demonstration preschool classroom. The interactions were videotaped for "waiting room" and "teaching situation." Studies such as these provide limited knowledge about the

specific conditions that evoke, strengthen, and modify children's behavior in language learning situations (Schaffer, 1974), such as home or differential conditions for children in different setting. Moreover, parents of retarded children may respond differently than those of nonhandicapped children to clinic observation. Further information should come from a continuing appraisal of the children's everyday life.

Secondly, early results of the research with mentally retarded children in which their mother's speech was compared with that of mothers who had normally language-developing children have indicated that mothers of young, Down Syndrome children engage in more "primitive" forms of speech (Buium et al. 1974; Marshall et al., 1973). The authors interpreted this to mean that mothers of Down Syndrome children may be inhibiting their children's language development via less sophisticated conversational patterns. More recently, some investigators have argued that findings of deviant maternal language style associated with mentally retarded children are related to methodological flaws (Rondal, 1977); i.e., the difference in maternal language could be due to the fact that the Down Syndrome children were matched with the "normal" children on chronological age (CA) (McLean et al., 1978), rather than mean length of utterance (MLU). Since Down Syndrome children often have reduced language abilities due to their general retardation, their mother may have been adjusting their child directed speech appropriately. When Rondal (1977) matched Down Syndrome children on linguistic level rather

than CA, he found essentially no differences in maternal language. The MLU measure rather than CA, is increasingly used as an indicator of child's relative stage of development because there is a wide range of variation in the ages at which children normally acquire specific linguistic abilities, whereas these developments correlate quite consistently with MLU levels.

The major goal of this study is to isolate and identify patterns occurring in language interactions between mothers and their nonhandicapped and Down Syndrome children. The study explores the nature of such language interactions and attempts to determine whether there are consistently recurring patterns within a group, and if so, whether these patterns are the same across groups. More specifically, the study is designed to investigate the following questions:

1. What is the mother-child communicative interaction patterns during mealtime and playtime?
2. Are there any difference in communicative interactions by the level of child's language development (measured by MLU), child's condition, and setting?

The data in this investigation were collected as one aspect of an ongoing 3-year Department of Education supported study of language interaction within and among three groups of children: nonhandicapped (NH), Down Syndrome (DS), and language-impaired (LI) and their mothers. In this study, the data for NH and DS children will be presented.

Method

Subjects

Twenty NH (10 female, 10 male) and 20 DS (10 female, 10 male) children and their mothers participated in this study. All subjects were caucasian, English speaking, middle-class, as defined by Hollingshead Index of Social Status (1975); all mothers were currently married, living with a spouse, and primary caregivers of their children.

The mean age for the mothers of the NH children was 30.0 years ($SD = 0.80$) and for the mothers of the DS children was 36.0 years ($SD = 1.34$). The educational level ranged from a minimum of high school to a postgraduate degree for mothers of NH children and from a minimum of partial college to a maximum of B.A. or B.S. for mothers of DS children. The mean parity was 1.81 for families with NH and 3.09 for families with DS children.

The mean age for NH children was 26.75 months ($SD = 4.24$) and for DS children was 64.48 ($SD = 27.87$). The mean MLU for NH children was 1.85 ($SD = 0.55$) and for DS children was 1.59 ($SD = 0.48$). According to Karyotype, all DS children were diagnosed as Trisomy 21 except one which was a Translocation.

The mothers were all contacted initially through several school districts and day-care centers in the Dallas/FortWorth metroplex and community organizations such as the Down Syndrome Guild. Mothers were asked to volunteer if their child could produce at least 10 words but was not regularly using multiword utterances.

Procedure

Two female observer made two visits to the home of participants. In the first visit, the demographic inventory were administered. During the visit, the observers conducted an informal interview with the mothers and children for the introduction of videotaped recording into the research.

In the second visit, language samples during free play and mealtime were videotaped for 20 minutes each session. The participants were not restricted to play with any toys, to eat any particular food, or to remain in any position. The mothers were told to "carry on their play and meal activities as they normally do."

After the videotape was transcribed and typed, it was checked by the observer who verified its accuracy and added the necessary contextual information. The final product was a complete record of verbal and behavioral events and the context in which these events occurred. All transcriptions were made in ordinary English orthography with phonetic notation used in cases where an English word could not be identified. Normal English punctuation was used to denote intonation patterns, to make the meaning of a sentence clear, or to indicate the pauses and stops which the speaker makes in speaking. The mood of each utterance was identified primarily on the basis of intonation and secondarily on the basis of structural features. For example, declarative sentences which ended in rising intonation were coded as interrogative mood.

In order to have a uniform transcription, transcribers

were provided with SALT (Systematic Analysis of Language Transcripts, Miller and Chapman, 1985) instructions for preparing and marking of the transcripts. Sample transcripts were jointly reviewed in conference to clarify and answer questions about instructions. An utterance-by-utterance reliability of the transcription was estimated by having the transcribers independently transcribe ten representative videotapes. The interrater agreement was computed to be 0.99.

A system of coding utterances of mothers and their children was developed by using the transcribed data and videotapes in conjunction. The coding system evolved from continuous observation and by employing existing categories developed mainly by Moerk (1974), Dore (1977), Rondal (1978), Hooshyar (1978), McShance (1980), and Broome and Uzgiris (1985).

The Mother-Child Language Usage (MCLU) system consists of four major categories: queries, declaratives, imperative, and feedbacks. These categories describe the general character of language used by the mothers and their children. They are further subdivided into 15 subcategories which identify the specific function of utterances used by mothers and their children.

Interobserver Reliabilities for MCLU

A random sample of 10% of videotaped sessions were coded independently by another coder. The reliability of the categories was estimated by computing the number of agreements divided by the sum of agreements and disagreements. The computed

reliabilities ranged from 0.75 to 0.96 for the children's categories and from 0.71 to 0.94 for the mother's categories. This procedure proved very useful for defining the categories unambiguously.

Results

Since total number of utterances varies from subject to subject and setting to setting, we did not use the frequency of occurrence of each MCLU categories. Rather, we converted the frequencies into percentage of total utterance for each setting. These percentage scores were analyzed using repeated measure analysis of variance with the child's MLU (high, low) and condition (NH, DS) as the between-subject factors and the setting (Mealtime and free play) as the within-subject factors.

Children were divided into two groups according to their MLU level. In this study, those children with MLU level between 1.00 and 1.75 were considered as low MLU and those with MLU level between 1.75 and 3.00 were regarded as high MLU.

The results of MANOVA analysis are presented in Table 1. In this Table any maternal language parameter significantly related ($P < .05$) to child's MLU, condition, setting, or their respective interaction terms are reported. For example, Total and Leading Queries addressed to children by their mothers did not significantly differ by child's MLU, condition, nor setting. Furthermore, no interaction terms were observed for these two categories. On the other hand, Coaching was used more for low MLU children than for high MLU children, but, was not significantly influenced by child's condition or setting.

For the sake of clarity, manageability, and time limitation, we do not present all the associated F values and averages for the categories and subcategories which were considered in this study. But, the numbers are available and will be presented in the forthcoming publication.

Discussion

The questions addressed in this study were: a) What is the mother-child communicative interaction patterns during mealtime and playtime and b) are there any difference in communicative interactions by the level of child's language development (measured by MLU), child's condition, and setting? As presented in Table 1, Total and Leading Queries, Informing Declaratives, Request For Action, Total and Corrective Feedback, and Granting permission were not significantly influenced by neither child's MLU, condition, nor setting.

In usage of Queries, there is no significant difference between NH and DS children. That is, the percentage of Queries in the total utterances is the same for both groups. But, the child's MLU level plays an important role in the types of Queries used. For example, regardless of condition Coaching is used more often with low MLU whereas, Information Request is used more often with high MLU children. We further notice that Information Request is used more during mealtime than playtime regardless of child's MLU level or condition. These findings seem to be in line with the results reported in Rondal's (1978) and Leifer and Lewis's (1980) studies that the child's linguistic ability is the primary determinant of maternal speech.

The use of Feedback shows a pattern similar to Queries. That is, as with Queries mother's usage of different types of Feedback was not influenced by the child's condition. Again, MLU was the determining factor in the case of Informative and Verbal Disapproval Feedback.

The only category that solely depended on the child's condition is the Imperative category, more specifically, Request for Attention. Further analysis is needed to see why mothers of DS children used this category more often than mothers of NH children. However, this observation seems to be consistent with Buckhalt's (1978) study. Where they found that DS infant responsiveness to their mothers were significantly less than that of nonretarded infants. In this study, we have collected data on children's interactions with their mothers, but, we have not had the chance to analyze them, yet.

Usage of Declaratives, particularly labeling objects is influenced by the child's condition and MLU. That is, Labeling is used more with low MLU NH children.

In conclusion, we see essentially that mothers speech directed to DS children is not significantly different in nature to mothers speech directed to NH children, if these children are matched according to their linguistic ability. Contrary to what some researchers have implied, mothers speech to DS children is not of poor quality. Overall they provide same kind of rich linguistic environment as the mothers of NH children. The only exceptions seems to be in the usage of Request for Attention and Labeling. Request for Attention may be explained by the

research findings showing that DS children are less responsive than NH children. Thus, mothers of DS children may need to spend more time in attention getting activities. The fact that Labeling is used more often with NH than with DS children requires further investigation to find out why mothers of DS children differ significantly from mothers of NH children on this language parameter. One hypothesis may be that Labeling is a CA related phenomenon. That is, the usage of label is dropped by the mothers after the child reaches a certain age. An alternative hypothesis would be that the DS child has acquired many labels and therefore the mother is not compelled to engage in this kind of teaching activity. Finally, we cannot overlook the possibility of a relationship between request for attention and labeling activities. Mothers who must spend time capturing child's attention may not find the time to engage in teaching activity such as naming and identifying objects. If the last speculation proves valid through our subsequent analysis the results would have profound implications for intervention programs. For example, mothers of DS children could be trained in more effective ways of engaging the child in ongoing task.

On a more practical level, our findings show that settings play a very important role in the type of utterances mothers direct toward their children. This again points to the importance of studying mother-child interaction in natural setting. The results of studies reported on the mother-child interaction in the laboratory setting are informative but one should keep in mind the considerable influence the setting

has on language interaction. As our data show, for some of the categories there are interaction terms between the setting and both the children's MLU and condition.

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Table 1:

Relationships Between Mother's Language Parameters and Child's MLU, Condition, and Setting

Language Parameter		Child's MLU (CMLU)	Child's Condition (CC)	Setting	CMLU × CC	CC × Setting	CMLU × Setting
Queries	Total						
	Leading						
	Coaching*	Low > High					
	Information Request*	Low < High		Meal > Play			
Declaratives	Total*		NH > DS				
	Labeling*	Low > High	NH > DS	Meal < Play	Low NH > Rest		
	Announcing*	Low < High		Meal > Play			High Meal > Rest
	Informing						
	Explaining*	Low < High		Meal > Play			
Imperatives	Total*		NH < DS				
	Request Attention*		NH < DS				
	Request Action						
	Proposal for Joint Action						
Feedbacks	Total						
	Informative*	Low < High		Meal > Play			High Meal > Low Meal High Meal > Low Play
	Evaluative*			Meal < Play			
	Corrective						
	Verbal Disapproval*	Low > High		Meal > Play			
	Granting Permission						
Total Utterance*				Meal < Play		NH Play > NH Meal	Low Play > Low Meal
Type-Token Ratio*				Meal > Play			
Mother's MLU*		Low < High		Meal < Play			

* Language Parameters which are Significantly different ($P < .05$) with Respect to Child's MLU, Condition or Setting

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